DMM-98 TRMS
Digital Multimeter User Manual

A. Introduction

DMM-98 TRMSare battery-powered, true-rms, auto-ranging digital multimeters with a 6000 counts, LCD display and backlight. Unless specially indicated, this manual applies to the both models. All figures show the VC17B+.

B. Safety Information

To avoid possible electrical shock, fire, or personal injury, please read all safety information before you use the product.

(1) Do **NOT** exceed the "**maximum value**" indicated in the Specification.
(2) Examine the connection of the test leads and the insulation of the product before measuring voltage higher than 36V DC or 25V AC.
(3) Disconnect the test leads from the circuit before changing the mode。
(4) Misuse of mode or range can lead to hazards, be cautious. "OL" will be shown on the display when the input is out of range.
(5) Safety symbols:

⚠	Hazardous Voltage	⏚	Earth
⚠	Double Insulated	🔋	Low Battery
◙	Risk of Danger. Check the User Manual.		

C. Specifications

Electrical Specifications					
Function	Range	Resolution	Accuracy	MAX.Value	Other
DC Voltage (V)	6.000V	0.001V	±(0.5%+3)	1000V	
	60.00V	0.01V			
	600.0V	0.1V			
	1000V	1V			
DC Voltage (mV)	60.00mV	0.01mV		600mV	
	600.0mV	0.1mV			
AC VoltAge (V)	6.000V	0.001V	±(1.0%+3)	750V	40Hz-1kHz
	60.00V	0.01V			
	600.0V	0.1V			
	750V	1V			
AC VoltAge (mV)	60.00mV	0.01mV		600mV	
	600.0mV	0.1mV			
DC Current (A)	6.000A	0.001A	±(1.2%+3)	20A	
	20.00A	0.01A			
DC Current (mA)	60.00mA	0.01mA		600mA	
	600.0mA	0.1mA			
DC Current (μA)	600.0μA	0.1μA		6000μA	
	6000μA	1μA			
AC Current (A)	6.000A	0.001A	±(1.5%+3)	20A	40Hz-1kHz
	20.00A	0.01A			
AC Current (mA)	60.00mA	0.01mA		600mA	
	600.0mA	0.1mA			
AC Current (μA)	600.0μA	0.1μA		6000μA	
	6000μA	1μA			

Function	Range	Resolution	Accuracy	MAX.Value	Other
Resistance	600.0Ω	0.1Ω	±(0.5%+3)	60MΩ	
	6.000kΩ	0.001kΩ			
	60.00kΩ	0.01kΩ			
	600.0kΩ	0.1kΩ			
	6.000MΩ	0.001MΩ			
	60.00MΩ	0.01MΩ	±(1.5%+3)		
Capacitance	9.999nF	0.001nF	±(5.0%+20)	9.999mF	
	99.99nF	0.01nF	±(2.0%+5)		
	999.9nF	0.1nF			
	9.999μF	0.001μF			
	99.99μF	0.01μF			
	999.9μF	0.1μF			
	9.999mF	0.001mF	±(5.0%+5)		
Frequency	99.99Hz	0.01Hz	±(0.1%+2)	9.999MHz	
	999.9Hz	0.1Hz			
	9.999kHz	0.001kHz			
	99.99kHz	0.01kHz			
	999.9kHz	0.1kHz			
	60.00MHz	0.01MHz			
Duty Cycle	1%~99%	0.1%	±(0.1%+2)		
Diode	√				
Continuity	√				
Temperature (DMM-98 TRMSonly)	(-20~1000)℃	1℃	±(2.5%+5)	1000℃	
	(-4~1832)℉	1℉		1832℉	

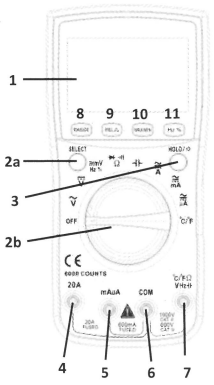
General Specifications		
Display（LCD）	6000 counts	
Ranging	15B+:Auto	17B+: Auto/Manual
Material	ABS	
Update Rate	3 times/second	
Ture RMS	√	
Data Hold	√	
Backlight	√	
Low Battery Indication	√	
Auto Power Off	√	

Mechanical Specifications		
Dimension	180*90*45mm	
Weight	345g/348g(battery included)	
Battery Type	1.5V AA Battery * 2	
Warranty	One years	
Environmental Specifications		
Operating	Temperature	0~40℃
	Humidity	<75%
Storage	Temperature	-20~60℃
	Humidity	<80%

Safety Specifications
EN 61010-1: 2010; EN 61326-1: 2013; FCC Part 15 Subpart B: 2016
Standard Accessories
Battery * 2pcs; Test Lead * 1 pair TP01K thermocouple probe * 1pc (DMM-98 TRMSonly); English User Manual; Gift Box

D. Instruction

(1) Front Panel（see the picture on the right）



1. LCD display
2. Bottons
2a. SELECT: To toggle between AC/DC, Voltage(mV)/Frequency/Duty Cycle/, Resistance/Continuity/Diode, or ℃/℉ , press this botton.
2b. HOLD: To hold the current reading, press this button and you will see "HOLD" on the display; press again to cancel. To turn on the backlight, press this botton for more than 2 seconds; long-press again to turn off.
3. Rotary Switch: To change mode or range。
(from OFF, clockwise)
3a. OFF
3b. AC Voltage (V)
3c. DC Voltage (V)
3d. Voltage(mV)/Frequency/Duty Cycle/
3e. Resistance/Continuity/Diode
3f. Capacitance
3g. AC/DC Current (A)
3h. AC/DC Current (mA)
3i. AC/DC Current (μA)
3j. Temperature
4. 20A: Input terminal for current (V) measurements.
5. mA/μA: Input terminal for current (mA and μA) measurements.
6. COM: Common terminal for all measurements.
7. VΩHz: Input terminal for voltage, frequency, duty cycle, resistance, continuity, diode, capacitance, and temperature measurements.
8. RANGE: press this botton to enter the manual range; each push increases the range; when the highest range is reached, next push will go back to the lowest range; to exit the manual range mode, press the button for 2 seconds.
9. REL: the product allows relative measurements for the Modes of Voltage, Current, and Capacitance; press this button to enter the relative measurements mode; press again to exit.
10. MAX/MIN: press the botton once to measure the MAX Value; press twice to measure the MIN Value; press three times to measure the difference between the two values; to exit the mode, press the botton for 2 seconds.
11. Hz%: press this button when you measure AC Voltage or AC Current to measure their frequency/duty cycle.

(2) Measure AC/DC Voltage

1. Connect the black test lead to the COM Terminal and connect the red test lead to the VHz Terminal;
2. Turn the rotary switch to the AC Voltage (V) Mode, the DC Voltage (V) Mode, or the Voltage (mV) Mode;
3. Press SELECT to toggle between AC/DC;
4. Touch the probes to the correct test points of the circuit to measure the voltage;
5. Read the measured voltage on the display.

*Caution:

a. Do not measure voltage that exceeds the MAX Value as indicated in the Specifications;
b. Do not touch high voltage circuit during measurements.

(3) Measure AC/DC Current

1. Connect the black test lead to the COM Terminal and connect the red test lead to the 20A Terminal or the mA/μA Terminal (choose based on the value of current) ;
2. Turn the rotary switch to the AC/DC Current (A) Mode, the AC/DC Current (mA) Mode, or the AC/DC Current (μA) Mode;
3. Press SELECT to toggle between AC/DC;
4. Break the circuit path to be measured. Then connect the test leads across the break and apply power;
5. Read the measured current on the display.

*Caution:

a. Do not measure current that exceeds the MAX Value as indicated in the Specifications;
b. Use the 20A Terminal and the Current-A Mode when you are measureing an unknown current. Then switch to the mA/μA Termianl and the smaller Current Mode if necessary.

Do not input voltage exceeds 36V DC or 25V AC when you are at the setting of measuring current.

(4) Measure Resistance

1. Connect the black test lead to the COM Terminal and connect the red test lead to the VHz Terminal;
2. Turn the rotary switch to the Resistance Mode, and the display will show "OL";
3. Touch the probes to the desired test points of the circuit to measure the resistance;
4. Read the measured resistance on the display.

*Caution:

a. Disconnect circuit power and discharge all capacitors before you test resistance.
b. Do not input voltage at the Resistance Mode.

(5) Measure Continuity

1. Connect the black test lead to the COM Terminal and connect the red test lead to the VHz Terminal;
2. Turn the rotary switch to the Resistance Mode, press SELECT once to toggle to the Continuity Mode;
3. Touch the probes to the desired test points of the circuit;
4. The built-in beeper will beep when the resistance is lower than 50Ω, which indicates a short circuit.

*Caution:

a. Do not input voltage at the Continuity Mode.

(6) Measure Diode

1. Connect the black test lead to the COM Terminal and connect the red test lead to the VHz Terminal;
2. Turn the rotary switch to the Resistance Mode, press SELECT twice to toggle to the Diode Mode;
3. Connect the red probe to the anode side and the black probe to the cathode side of the diode being tested;
4. Read the forward bias voltage value on the display;
5. If the polarity of the test leads is reversed with diode polarity or the diode is broken, the display reading shows "OL".

*Caution:

a. Do not input voltage at the Diode Mode.
b. Disconnect circuit power and discharge all capacitors before you test diode.

(7) Measure Capacitance

1. Connect the black test lead to the COM Terminal and connect the red test lead to the VHz Terminal;
2. Turn the rotary switch to the Capacitance Mode;
3. Connect the red probe to the anode side and the black probe to the cathode side of the capacitor being tested;
4. Read the measured capacitance value on the display once the reading is stablized.

*Caution:

a. Disconnect circuit power and discharge all capacitors before you test capacitance.

(8) Measure Frequency and Duty Cycle

1. Connect the black test lead to the COM Terminal and connect the red test lead to the VHz Terminal;
2. Turn the rotary switch to the Voltage(mV) Mode; press SELECT twice to toggle to the Frequency Mode or press SELECT three times to toggle to the Duty Cycle Mode;
3. Touch the probes to the desired test points of the circuit;
4. Read the measured frequency/duty cycle value on the display.

*Caution:

a. The Frequency Mode only applies to measure high frequency with low voltage.

(9) Measure Temperature

1. Connect the black thermocouple probe to the COM Terminal and connect the red thermocouple probe to the VHz Terminal;
2. Turn the rotary switch to the Temperature Mode, and the display will show the room temperature, to toggle between °C/°F , press SELECT botton;
3. Touch the probes to the desired test points;
4. Read the measured temperature on the display.

*Caution:

a. Do not input voltage at the Temperature Mode.

(10) Auto Power Off

1. The product automatically powers off after 15 minutes of inactivity;
2. The built-in beeper beeps 5 times 1 minute before power off;
3. To restart the product, press SELECT botton;
4. To disable the Auto Power Off function, hold down the SELECT botton when turning on the product, you will hear five beeps if you have successfully disabled the function.

E. Genearl Maintenance

Beyond replacing batteries and fuses, do not attempt to repair or service the product unless you are qualified to do so and have the relevant calibration, performance test, and service instructions.

(1) Do not operate the product around hot, wet, flammable, explosive or magnetic environments.
(2) Clean the product with damp cloth and mild detergent; do not use abrasives or solvents.
(3) Remove the input signals before you clean the product.
(4) Remove the batteries if you will not use the product for a long time to prevent possible battery leak.
(5) When " " is shown on the display, batteries shall be replaced as below:
   1. Loosen the screw and remove the battery cover;
   2. Replace the used batteries with new batteries of the same type;
   3. Place the battery cover back and fasten the screw.
(6) Replace fuses as above steps. Use only fuses of the same type as the original ones.

Warning:

1. Do NOT exceed the "maximum value" indicated in the Specification;
2. Do NOT input voltage at the Current Mode, the Resistance Mode, the Diode Mode, the Continuity Mode, or the Temperature Mode;
3. Do NOT use the product when the batteries or the battery cover is not placed properly;
4. Turn off the product and remove the test leads from the test points before changing batteries or fuses.

F. Troubleshooting

If your product do not function as normal, the following steps may help you. If the problem still cannot be solved, please contact your dealer.

Problem	Possible Reason
Display Mulfunction	Low battery; replace batteries
Symbol	Replace batteries
No current input	Replace fuse

LIMITED WARRANTY
AND LIMITATION OF LIABILITY

Customers enjoy one-year warranty from the date of purchase. This warranty does not cover fuses, disposable batteries, or damage from accident, neglect, misuse, alternation, contamination, or abnormal conditions of operation or handling.